

UNITED STATES PATENT AND TRADEMARK OFFICE

App. No.: 10/618,059
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Inventor(s): Brian J. Schwartz et al.
Assignee: United Technologies Corp.
Title: COOLANT NOZZLE

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Group Art Unit: 3723
Examiner: H. Shakeri

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DECLARATION UNDER 37 CFR § 1.132

Mail Stop Amendment
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Dear Sir:

The undersigned, Bernard D. Vaillette, declares as follows:

1. I am a coinventor of the present application.
2. I presently am a Manufacturing Engineer – Grinding Specialist, at Pratt & Whitney, a United Technologies company.
3. I received a B.S. in Mechanical Engineering from Lowell Technological Institute in 1967 and an M.S. in Mechanical Engineering from Worcester Polytechnic Institute in 1975.
4. I have almost 40 years of experience in machining and machining technology with particular emphasis on grinding and abrasive machining. From 1967 to 1992, I worked in various engineering and research capacities for Cincinnati Milacron, Heald Division, in Worcester, Massachusetts. There, my work principally involved the development of grinding machines and methods. From 1993 to 1999 I worked at the University of Connecticut - Precision Manufacturing Center in Storrs, Connecticut. I served in various capacities including Grinding

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Researcher and Interim Associate Director. Thereafter, I worked at Pratt & Whitney as a contractor and employee. At Pratt & Whitney, my principal work has been in abrasive machining of aerospace components.

5. I have read and understand and am familiar with the disclosures of U.S. Patent No. 4,252,768 of Perkins et al., U.S. Patent No. 6,471,573 of Reitmeyer, and the drawings and English language Derwent abstract of DE20216396U, and the disclosure and claims of the present application as reflected in the amendment filed April 20, 2006.

6. DE '396 does not disclose all the limitations of claim 10. It fails to disclose an elongate abrasive bit. Instead, it discloses disks. It also fails to disclose the common radial position of claim 11, instead disclosing two different radial positions.

7. At the time the present application was filed and before, it would not have been obvious to one of ordinary skill in the machining art (generally or down to the particular field of quill superabrasive machining) to modify the Reitmeyer nozzle to include a sintered body and have no circumferential outlet gaps more than 72° as is identified in independent claims 1 and 20 or, individually, the spacing of independent claim 10 and sintered material of independent claim 16.

8. At the time the present application was filed and before, it would not have been obvious to one of ordinary skill in the art to modify Reitmeyer in view of DE '396. The complex manufacturing techniques of Reitmeyer would be complicated further by any attempt to increase outlet count and broaden outlet distribution.

9. At the time the present application was filed and before, it would not have been obvious to one of ordinary skill in the art to have modified Reitmeyer based upon Perkins et al. to be formed of a sintered material. Perkins et al. chose their material based upon properties relative to interfacing with a hot abrasive blasting medium, which is the antithesis of a coolant nozzle use.

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10. At the time the present application was filed and before, it would not have been obvious to one of ordinary skill in the art to have modified DE '396 based upon Perkins et al. to be formed of a ceramic material for the same reason noted in the preceding paragraph.

11. The long availability of the sintered material of Perkins et al. further emphasizes the nonobviousness of the combination with Reitmeyer. There was plenty of time for the combination to have been made, but it was not made.

12. In grinding, coolant delivery is critical to avoid damage to the part being machined and to the bit. This is particularly significant in abrasive quill machining (where there are very high temperatures at the grinding zone and often workpieces whose properties are relatively sensitive), but has long been a concern in broader grinding (e.g., Reitmeyer, application). The use of sintered material and associated manufacturing processes provides a flexibility to economically make a compact coolant nozzle that offers high coverage to provide desired control over workpiece temperature.

13. Although I don't see a particular reason why one of ordinary skill in the art would seek to discharge multiple streams from a given outlet, the present application is not non-enabling as to that result. Outlet shape, combined with fluid surface tension and driving pressures may produce many such results, often unintended. If, for some reason, one of ordinary skill in the art desired multiple streams be discharged from a given outlet, one could provide that result with routine experimentation.

14. The claim 15 recitation of redundant coverage is clear. One of ordinary skill in the art would understand that the redundancy provides full circumferential coverage even when one or more of the sprays are blocked.

The undersigned declares further that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and

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further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issuing thereon.

Respectfully submitted,

Bernard D. Vailllette

Bernard D. Vailllette
September 25, 2006